

WHAT IS CLAIMED IS

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1. A data communication apparatus comprising:

a first communication part which transfers
data from one single transfer source to a plurality of
other transfer destinations concurrently;

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a second communication part which transfers
data from one single transfer source to another single
transfer destination;

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a re-transfer part which, when receiving
reception error information from at least one of a
plurality of other transfer destinations which indicates
that data reception has not been performed properly as a
result of the data transfer being performed by said
first communication part for the plurality of other
transfer destinations, performing data re-transfer to

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said at least one of other plurality of transfer
destinations with one selected from said first and
second communication parts according to the number of
said at least one of other plurality of transfer
destinations which has transmitted the reception error

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information.

2. The data communication apparatus as claimed in claim 1, wherein:

said first communication part employs a multicast data transmission way while said second communication part employs a unicast data transmission way.

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3. The data communication apparatus as claimed in claim 2, wherein:

said multicast data transmission way comprises an isochronous data transmission way while said unicast data transmission way comprises an asynchronous data transmission way.

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4. The data communication apparatus as claimed in claim 1, wherein:

a method of selecting one from the first communication part and second communication part according to the number of the at least one of the other

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plurality of transfer destinations which has transmitted
the reception error information performed by said re-
transfer part comprises a method in which one of the
first and second communication parts with which the
5 number of times of communication operations with the
plurality of transfer destinations required until the
re-transfer of the data which has not been performed
properly is completed since the reception error
information has been received becomes smaller should be
10 selected.

15 5. The data communication apparatus as
claimed in claim 1, wherein:
the data transferred to the plurality of other
transfer destinations comprises image data.

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6. A data communication apparatus which
receives data transferred with a first communication
25 part which transfers data from one single transfer

source to a plurality of other transfer destinations concurrently, and a second communication part which transfers data from one single transfer source to another single transfer destination, comprising:

5 a re-transfer receiving part which transmits predetermined reception error information when data has not been received properly even receiving the data transferred via said first communication part, and receives the data thus not received property and thus
10 re-transmitted via one selected from said first and second communication parts according to the number of transfer destinations having transmitted the predetermined reception error information.

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7. The data communication apparatus as claimed in claim 6, wherein:

20 said first communication part employs a multicast data transmission way while said second communication part employs a unicast data transmission way.

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8. The data communication apparatus as claimed in claim 7, wherein:

said multicast data transmission way comprises an isochronous data transmission way while said unicast
5 data transmission way comprises an asynchronous data transmission way.

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9. The data communication apparatus as claimed in claim 6, wherein:

the data transferred to the plurality of other transfer destinations comprises image data.

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10. A data communication system comprising:
20 at least one data communication apparatus, comprising a first communication part which transfers data from one single transfer source to a plurality of other transfer destinations concurrently, and a second communication part which transfers data from one single
25 transfer source to another single transfer destination;

and

a plurality of receiving apparatuses comprising a part which receives data transferred from said at least one data communication apparatus, and a
5 part which, upon data reception with said data receiving part not having been performed properly, transmits to the data transfer source reception error information indicating this matter,

wherein:

10 said at least one data communication apparatus comprises a re-transfer part which, when receiving the reception error information from at least one of the plurality of receiving apparatuses which indicates that data reception has not been performed properly as a
15 result of the data transfer being performed by said first communication part for the plurality of receiving apparatuses, performs data re-transfer to said at least one of receiving apparatuses with one selected from said first and second communication parts according to the
20 number of said at least one of other plurality of receiving apparatuses which has transmitted the reception error information.

11. The data communication system as claimed
in claim 10, wherein:

said first communication part employs a
multicast data transmission way while said second
5 communication part employs a unicast data transmission
way.

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12. The data communication system as claimed
in claim 11, wherein:

said multicast data transmission way comprises
an isochronous data transmission way while said unicast
15 data transmission way comprises an asynchronous data
transmission way.

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13. The data communication system as claimed
in claim 10, wherein:

a method of selecting one from the first
communication part and second communication part
25 according to the number of the at least one of receiving

apparatuses which has transmitted the reception error
information performed by said re-transfer part comprises
a method in which one of the first and second
communication parts with which the number of times of
5 communication operations with the plurality of receiving
apparatuses required until the re-transfer of the data
which has not been performed properly is completed since
the reception error information has been received
becomes smaller should be selected.

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14. The data communication apparatus as
15 claimed in claim 10, wherein:

the data transferred to the plurality of
receiving apparatuses comprises image data.

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15. A data communication method for
performing data communication among a plurality of
apparatuses in use of a first communication manner of
25 transferring data from one single transfer source to a

plurality of other transfer destinations concurrently
and a second communication manner of transferring data
from one single transfer source to another single
transfer destination, said method comprising the step

5 of:

when receiving reception error information
from at least one of a plurality of other transfer
destinations which indicates that data reception has not
been performed properly as a result of the data transfer
10 being performed in said first communication manner for
the plurality of other transfer destinations, performing
data re-transfer to said at least one of other plurality
of transfer destinations in one selected from said first
and second communication manners according to the number
15 of said at least one of other plurality of transfer
destinations which has transmitted the reception error
information.

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16. The data communication method as claimed
in claim 15, wherein:

said first communication manner comprises a
25 multicast data transmission way while said second

communication part comprises a unicast data transmission way.

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17. The data communication method as claimed in claim 16, wherein:

said multicast data transmission way comprises
10 an isochronous data transmission way while said unicast data transmission way comprises an asynchronous data transmission way.

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18. The data communication method as claimed in claim 15, wherein:

a method of selecting one from the first
20 communication manner and second communication manner according to the number of the at least one of the other plurality of transfer destinations which has transmitted the reception error information performed in said re-transfer step comprises a method in which one of the
25 first and second communication manners with which the

number of times of communication operations with the plurality of transfer destinations required until the re-transfer of the data which has not been performed properly is completed since the reception error
5 information has been received becomes smaller should be selected.

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19. The data communication method as claimed in claim 15, wherein:

the data transferred to the plurality of other transfer destinations comprises image data.

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20. A data communication program comprising
20 instructions for causing a computer which controls a communication apparatus performing data communications, to execute with said communication apparatus data communications with a plurality of apparatuses in use of a first communication manner of transferring data from
25 one single transfer source to a plurality of other

transfer destinations concurrently and a second
communication manner of transferring data from one
single transfer source to another single transfer
destination, said program comprising the instruction
5 causing the computer to execute with the communication
apparatus the step of:

when receiving reception error information
from at least one of a plurality of other transfer
destinations which indicates that data reception has not
10 been performed properly as a result of the data transfer
being performed in said first communication manner for
the plurality of other transfer destinations, performing
data re-transfer to said at least one of other plurality
of transfer destinations in one selected from said first
15 and second communication manners according to the number
of said at least one of other plurality of transfer
destinations which has transmitted the reception error
information.

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21. The data communication program as claimed
in claim 20, wherein:

25 said first communication manner comprises a

multicast data transmission way while said second communication part comprises a unicast data transmission way.

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22. The data communication program as claimed in claim 21, wherein:

10 said multicast data transmission way comprises an isochronous data transmission way while said unicast data transmission way comprises an asynchronous data transmission way.

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23. The data communication program as claimed in claim 20, wherein:

20 a method of selecting one from the first communication manner and second communication manner according to the number of the at least one of the other plurality of transfer destinations which has transmitted the reception error information performed in said re-
25 transfer step comprises a method in which one of the

first and second communication manners with which the
number of times of communication operations with the
plurality of transfer destinations required until the
re-transfer of the data which has not been performed
5 properly is completed since the reception error
information has been received becomes smaller should be
selected.

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24. The data communication program as claimed
in claim 20, wherein:

the data transferred to the plurality of other
15 transfer destinations comprises image data.

20 25. A computer-readable information recording
medium in which the data communication program claimed
in claim 20 is recorded.

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26. A computer-readable information recording medium in which the data communication program claimed in claim 21 is recorded.

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27. A computer-readable information recording medium in which the data communication program claimed in claim 22 is recorded.

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28. A computer-readable information recording medium in which the data communication program claimed in claim 23 is recorded.

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29. A computer-readable information recording medium in which the data communication program claimed in claim 24 is recorded.